Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-40. Canceled

41. (New) A nucleic acid molecule comprising a 5' portion of an intestinal lactase-phlorizine hydrolase (LPH) gene contributing to or indicative of adult-typo hypolactasia wherein said nucleic acid molecule is selected from the group consisting of

(a) a nucleic acid molecule having or comprising the nucleic acid sequence of SEQ ID NQ:1, the sequence of SEQ ID NO:1 is also depicted in Fig. 4 and comprised in the sequence as depicted in Fig. 8;

(b) a nucleic acid molecule having or comprising the nucleic acid sequence of SEQ ID NO:2, the sequence of SEQ ID NO:2 is also depicted in Fig. 5 and comprised in the sequence as depicted in Fig. 9;

(c) a nucleic acid molecule of at least 20 nucleotides the complementary strand of which hybridizes under stringent conditions to the nucleic acid molecule of (a) or (b), wherein said polynucleotide has at a position corresponding to position -13910 5' from the LPH gene a cytosine residue; and

(d) a nucleic acid molecule of at least 20 nucleotides the complementary strand of which hybridizes under stringent conditions to the nucleic acid molecule of (a) or (b), wherein said polynucleotide has at a position corresponding to position -22018 5' from the LPH gene a guanine residue wherein said nucleic molecule extends, at a maximum, 30000 nucleotides over the 5'

and/or 3' end of the nucleic acid molecule of SEQ ID NO:1 or 2, respectively.

42. (New) A nucleic acid molecule comprising a 5' portion of an intestinal lactase-phlorizine hydrolase (LPH) gene wherein said nucleic acid molecule is selected from the group consisting of

(a) a nucleic acid molecule having or comprising the nucleic acid sequence of SEQ ID NO:3, the sequence of SEQ ID NO:3 is also depicted in Fig. 6;

(b) a nucleic acid molecule having or comprising the nucleic acid sequence of SEQ ID NO:4, the sequence of SEQ ID NO:4 is also depicted in Fig. 7;

(c) a nucleic acid molecule the complementary strand of which hybridizes under stringent conditions to the nucleic acid molecule of (a) or (b) wherein said polynucleotide has at a position corresponding to position -13910 of the LPH gene a thymidine residue and wherein said hybridizing nucleic acid molecule comprises at least 100 nucleotides 5' and 3' of the position -13910 of the LPH gene; and

(d) a nucleic acid molecule the complementary strand of which hybridizes under stringent conditions to the nucleic acid molecule of (a) or (b), wherein said polynucleotide has at a position corresponding to position -22013 of the LPH gene a adenosine residue and wherein said hybridizing nucleic acid molecule comprises at least 100 nucleotides 5' and 3' of the position -22015 of the; LPH gene.

43. (New) The nucleic acid molecule of claim 41 or 42 which is genomic DNA.

44. (New) The nucleic acid molecule of claim 43 wherein said genomic DNA is part of a gene.

45. (New) A fragment of the nucleic acid molecule of any one of claim 41 or 42 having at least 14 nucleotides wherein said fragment comprises nucleotide position -13910 or nucleotide position -22018 of the LPH gene.

46. (New) A nucleic acid molecule which is complementary to the nucleic acid molecule of claim 41 or 42.

47. (New) A vector comprising the nucleic acid molecule of claim 42.

48. (New) A vector comprising the nucleic acid molecule of claims 41 or 42.

49. (New) A primer or primer pair, wherein the primer or primer pair hybridizes under stringent conditions to the nucleic acid molecule of claim 41 or 42, comprising nucleotide position -13910 or -22018 of the LPH gene or to the complementary strand thereof.

50. (New) A primer or primer pair, wherein the primer or primer pair hybridizes under stringent conditions to the nucleic acid molecule of claim 41 or 42, comprising nucleotide position -13910 or -22018 of the LPH gene or to the complementary strand thereof.

51. (New) A non-human host transformed with the vector of claim 46.

52. (New) The non-human host of claim 51, which is a bacterium, a yeast cell, an insect cell, a fungal cell, a mammalian cell, a plant cell, a transgenic animal or a transgenic plant.

53. (New) An antibody or aptamer or phage that specifically binds to the mutant nucleic acid molecule of claim 41 or 42 but not to the corresponding wild-type nucleic

acid molecule, wherein a wild-type nucleic acid molecule has at the position corresponding to the position -13910 of the LPH gene a thymidine and/or at the position corresponding to the position -22018 an adenosine, and a mutant nucleic acid molecule has at the position corresponding to the position -13910 a cytosine and/or at the position corresponding to the position -22018 a guanine.

54. (New) An antibody or aptamer or phage that specifically binds to the wild-type nucleic acid molecule of claim 41 or 42, but not to the corresponding mutant sequence contributing to or indicative of adult-type hypolactasia, wherein a wild-type nucleic acid molecule has at the position corresponding to the position -13910 of the LPH gene a thymidine and/or at the position corresponding to the position -22018 an adenosine, and a mutant nucleic acid molecule has at the position corresponding to the position -13910 a cytosine and/or at the position corresponding to the position -22018 a guanine.

55. (New) A pharmaceutical composition comprising the wild-type nucleic acid molecule of claim 41 or 42, wherein a wild-type nucleic acid molecule has at the position corresponding to the position -13910 of the LPH gene a thymidine and/or at the position corresponding to the position -22018 an adenosine.

56. (New) A diagnostic composition comprising the nucleic acid molecule of claim 41 or 42.

57. (New) A method for testing for the presence or predisposition of adult-type hypolactasia comprising testing a sample obtained from a prospective patient or from a person suspected of carrying such a predisposition for the presence of the nucleic acid molecule of claim 41 or 42 in a homozygous or heterozygous state.

58. (New) A method for testing for the presence or predisposition of adult-type hypolactasia or associated trait comprising testing a sample obtained from a prospective

patient or from a person suspected of carrying such a predisposition for the presence of the nucleic acid molecule of claim 41 or 42 in a homozygous or heterozygous state.

59. (New) The method of claim 57, wherein said testing comprises hybridizing the complementary nucleic acid molecule of claim 46 which is complementary to the nucleic acid molecule contributing to or indicative of adult-type hypolactasia or the nucleic acid molecule of claim 46 which is complementary to the wild-type sequence as a probe under stringent conditions to nucleic acid molecules comprised in said sample and detecting said hybridization, wherein a wild-type nucleic acid molecule has at the position corresponding to the position -13910 of the LPH gene a thymidine and/or at the position corresponding to the position -22018 an adenosine, and a mutant nucleic acid molecule has at the position corresponding to the position -13910 a cytosine and/or at the position corresponding to the position -22018 a guanine.

60. (New) The method of any one of claim 57, further comprising digesting the product of said hybridization with a restriction endonuclease or subjecting the product of said hybridization to digestion with a restriction endonuclease and analyzing the product of said digestion.

61. (New) The method of claim 59, wherein said probe is detestably labeled.

62. (New) The method of claim 57, wherein said testing comprises determining the nucleic acid sequence of at least a portion of the nucleic acid molecule of any one of claims 1 to 7, said portion comprising nucleotide position -13910 and/or nucleotide position -22018 of the LPH gene.

63. (New) The method of claim 62, wherein the determination of the nucleic acid sequence is effected by solid-phase minisequencing.

64. (New) The method of claim 62 further comprising, prior to determining said nucleic acid sequence, amplification of at least said portion of said nucleic acid molecule.

65. (New) The method of claim 57, wherein said testing comprises carrying out an amplification reaction wherein at least one of the primers employed in said amplification reaction is the primer of claim 50 or belongs to the primer pair of claim 50, comprising assaying for an amplification product.

66. (New) The method of claim 57, wherein said testing comprises carrying out an amplification reaction wherein at least one of the primers employed in said amplification reaction is the primer of claim 51 or belongs to the primer pair of claim 51, comprising assaying for an amplification product.

67. (New) The method of any one of claim 64 wherein said amplification is effected by or said amplification is the polymerase chain reaction (PGR).

68. (New) A method for testing for the presence or predisposition of adult-type hypolactasia comprising assaying a sample obtained from a human for specific binding to the antibody or aptamer or phage of claim 53.

69. (New) A method for testing for the presence or predisposition of adult-type hypolactasia comprising assaying a sample obtained from a human for specific binding to the antibody or aptamer or phage of claim 54.

70. (New) The method of claim 68, wherein said antibody or aptamer or phage is detestably labeled.

71. (New) The method of claim 68, wherein the test is an immuno-assay.

72. (New) The method of claim 57, wherein said sample is blood, serum, plasma, fetal tissue, saliva, urine, mucosal tissue, mucus, vaginal tissue, fetal tissue obtained from the vagina, skin, hair, hair follicle or another human tissue.

73. (New) The method of claim 57, wherein said nucleic acid molecule from said sample is fixed' to a solid support.

74. (New) The method of claim 73, wherein said solid support is a chip, a silica wafer, a bead or a microtiter plate.

75. (New) Kit comprising the nucleic acid molecule of claim 41 or 42.